

REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claim 4 is currently being amended. No new matter is being added.

This amendment changes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 3-12 are now pending in this application.

Rejections under 35 U.S.C. §§ 102 and 103

Claims 1-13 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,060,686 to Jones (hereafter “Jones”) in view of U.S. Patent No. 5,938,954 to Onuma et al. (hereafter “Onuma”).¹ Claim 10 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Jones and Onuma, and further in view of U.S. Patent No. 3,632,955 to Cruickshank et al. (hereafter “Cruickshank”). Applicants respectfully traverse these rejections for at least the following reasons.

Independent claim 4 recites “wherein the nozzle is formed as a disk having a flat surface area facing the workpiece and having the gas exit at the center thereof, and wherein the nozzle has a circular groove extending in a circumferential direction on the surface area facing the workpiece.” Jones, Cruickshank, and Onuma fail to suggest at least this feature, or the advantages attendant thereto.

The Final Office Action relies on Onuma for disclosing a nozzle “having a circular groove extending in the circumferential direction.” While Onuma discloses a nozzle, Onuma does not disclose that its nozzle “has a circular groove extending in a circumferential direction on the surface area facing the workpiece” as recited in claim 4. While Onuma

¹ Although claims 1-13 were rejected, applicants note that only claims 3-12 are currently pending. Claims 1-2 and 13 were cancelled in the Amendment filed April 19, 2006.

discloses grooves 43, the Onuma grooves 43 are linear to allow thin wires 41 to move up and down in an axial direction in frame 42 (See Figs. 8(a), 8(b), 9; col. 15, lines 21-33). Moreover, the grooves 43 project into the irregular surface 46 that is being operated on by the Onuma nozzle. Thus, in contrast to claim 4, Onuma fails to disclose a circular groove that extends in a circumferential direction on the surface area of the nozzle facing the workpiece.

The Advisory Action states on page 2, “it is noted that the features upon which applicant relies (i.e., nozzle has only a single groove) are not recited in the claim(s).” This statement is not understood, as applicants have not argued that the claims require only a single groove.

The Advisory Action further states on pages 2-3, “While the examiner agrees that [Onuma]’s groove extends in an axial direction, it is the examiner’s position that the grooves extend along the circumference of the surface where each groove extends along that circumferential direction.” Applicants respectfully disagree that the grooves 43 extend along a circumferential direction. While FIG. 8(a) of Onuma show that the grooves extend substantially along the axial direction, with a small component along the radial direction, there is no disclosure in Onuma that the direction of the extension of the grooves have any component along the circumferential direction, much less extending in the circumferential direction.

Moreover, Jones and Onuma fail to suggest the advantages attendant to the apparatus of claim 4. The groove arranged as recited in claim 4 may act as resistance against water, even if bubbles are generated during the operation (see present specification, page 8, paragraph [0036]). Thus, the gas atmosphere may be maintained within the nozzle. Jones and Onuma, failing to suggest a nozzle with the groove as arranged in claim 4, fail to suggest the advantages resulting from this arrangement.

Jones and Onuma also fail to disclose “wherein the nozzle is formed as a disk” as recited in claim 4. The nozzle 20 of Jones is not formed as a disk, but is a hollow cylindrical nozzle, as can be seen in FIG. 2 of Jones.

Cruickshank was cited for other features of the claims, but fails to cure the deficiencies of Jones and Onuma.

The dependent claims all ultimately depend from independent claim 4, and are patentable for at least the same reasons, as well as for further patentable features recited therein.

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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